

Daifuku has conducted joint research and development with universities and companies, and of course also develops its own in-house technology.

In addition, we are promoting open innovation to strengthen our core business and generate technologies leading to the creation of new businesses. One of these representative core technologies, is our HID*, a non-contact power supply system that has produced high added value over the last quarter of a century. In this section, we will profile HID technology, a system that contributes to the environment and safety, and has earned high praise from the automobile and semiconductor industries. *HID: High efficiency inductive power distribution (technology)

Joint Development with Industry and Academia Generates Technological World's First

The basic technology for HID was invented in 1990 by researchers at the University of Auckland, New Zealand, led by Professor John Boys. We began research and development jointly with the university to find practical uses for HID technology, and after three years we were successful in applying the technology. We acquired exclusive rights to use and market HID in the material handling field, and registered the HID technology patents worldwide.

In 1993, we delivered the world's first electrified monorail system employing HID to an automobile factory in Japan. This system can be used in harsh environments including those that involve water, steam and oil. Highly acclaimed as a technology excellent in safety and serviceability, the system has been introduced at automobile factories worldwide.



Applying the Technology Across a Range of Industries

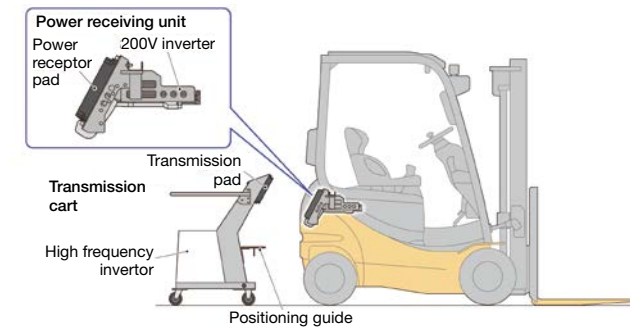
Applications opened up not only for automobile factories but also for transport systems used for semiconductor wafers produced in highly clean environments where dust is not permitted and for glass substrates used for flat-panel displays. Now HID is indispensable for Daifuku and has become a core technology. To date, we have delivered a total of more than 10,000 systems.



Developing a Devices Business

As a spin-off from HID technology, we developed D-PAD, a non-contact charging technology that can wirelessly and automatically charge electric-powered battery-equipped vehicles such as forklift trucks and automatic guided vehicles. In February 2016, with the cooperation of Komatsu Forklift Japan Co., Ltd. (now Komatsu Customer Support Japan Ltd.), we achieved commercialization of the world's first non-contact charging system for electric forklifts. With patent applications underway, Daifuku is pouring its efforts into marketing activities. Moreover, we are currently continuing to conduct collaborative research and development with universities.

In recent years, in addition to expanding the applications of wireless charging to smartphones and home electrical appliances, at Daifuku we are focusing on applications in such areas as electric vehicles. We will strive to contribute to society through our business activities to realize a smart society.



Proactive Patent Application

At Daifuku, we proactively seek patent applications and rights for our newly developed products. In recent years, the number of patent applications is increasing steadily, and we have acquired patents in more than 30 countries and regions around the world. Notably, registrations in Asian countries and regions such as China, South Korea and Taiwan are increasing.

